REPORT

IMPERIAL MYCOLOGICAL INSTITUTE
23 OCT 1941

ON THE

DEPARTMENT OF AGRICULTURE

ST. LUCIA,

1940.

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REVISED PRICES OF NURSERY PLANTS AND SUPPLIES.

1. The prices of plants do not include the cost of the box or package, for which a charge will be made if not returned to the Department. The cost of delivery will, as far as possible, be included in the prices, but it must be understood that this is a matter entirely in the discretion of the Agricultural Superintendent.

2. All prices specified are for plants of standard quality. The prices of plants not included in this list will be fixed by the Agricultural Superintendent.

3. An addition of 100 per cent. is made on the price of all plants supplied for export from the Colony.

4. No plants are supplied on Public Holidays.

5. At least six months previous notice must be given when large numbers of such plants as bananas, coconuts, coffee, cacao, nutmegs, citrus, cane plants, &c., are required. All such orders should be in writing, and verbal or telephone messages should be confirmed in writing. In default of this rule such orders may not be attended to.

6. All orders will be supplied subject to the discretion of the Agricultural Superintendent and no responsibility is taken in regard to quality or quantity of plants after despatch from the Nurseries.

7. Complaints as to the quality or quantity of plants, &c., supplies, or as to the prices charged, should be made in writing to the Agricultural Superintendent at the time of delivery.

TERMS ARE FOR CASH OR STRICTLY MONTHLY PAYMENTS AT THE DISCRETION OF THE AGRICULTURAL SUPERINTENDENT.

I. PLANTS.

	s.	*d.*	
Banana Plants (sections or suckers)		1	per plant (delivered at Quilesse Nursery)*
Oranges Budded		4	per plant.
Oranges Sour		6	per hundred.
Grapefruit Budded		4	per plant.
Lime Plants Budded/Grafted		4	per plant.
Mangoes Budded/Grafted		6	to 1*s.* per plant.
Coffee Plants	1	0	to 2*s.* per hundred.
Cacao Budded		6	per plant.
Nutmegs Grafted		6	per plant.
Avocado Pears		2	to 3*d.* per plant.
Avocado Grafted		6	per plant.
Cane Plants	1	0	per hundred (delivered at Nursery)
Pineapple Plants		1	to 3*d.* per plant.
Casuarina	2	0	per hundred.
Casuarina (in pots)		1	each
Palms (various)		3	per plant.
Ornamental Plants (various)		2	to 1*s.* per plant.
Seeds (various)		2	and 3*d.* per packet.
Plants for windbreaks, hedges, &c., other than the above mentioned	2	0	per hundred.
Plants for windbreaks, hedges, &c., other than the above mentioned (in pots)		1	each.
Grass and Fodder Plants.	1	0	to 2*s.* per hundred (delivered at Nursery).
Cover Crops and Green Manures		2	per lb.

* Transport charges from Quilesse to Mahaut to point of delivery are extra.

STAFF OF THE DEPARTMENT OF AGRICULTURE, ST. LUCIA.

E. T. Ward, Dip. Agric. (S. Africa)	Agricultural Superintendent and Land Officer.
G. B. Gregory, Dip. Agric. (I.C.T.A.)	Assistant Agricultural Superintendent and Chief Fruit Inspector.
G. M. Glasgow	Agricultural Officer Class I and Fruit Inspector.
C. M. Alexander	Agricultural Officer Class II and Fruit Inspector.
D. Glasgow	Banana Instructor.
Miss E. T. Bouty	Chief Clerk and Accountant.
E. V. Lewis (1)	Second Clerk.
J. F. Girard (2)	Second Clerk.
Miss C. O. Y. Clauzel	Copyist.

Government Marketing Depot.

G. B. Gregory	Manager, Government Marketing Depot.
Miss I. St. Helene	Temporary Copyist.

(1) To 1.6.41. (2) From 1.6.41.

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SAINT LUCIA.

Report of the Department of Agriculture for the year ended December 31st, 1940.

1. AGRICULTURE IN THE COLONY.

Weather Conditions.

1. This has been a drier year than usual with a rainfall much below average, resulting in some restriction of planting operations in the coastal areas.

2. A severe storm broke over the Island on August 4th, similar to that recorded on June 19th of last year, accompanied by torrential rain which continued for several hours, and caused severe damage to cultivations by flooding and landslides.

2. (A)—GENERAL CONDITIONS AND PROGRESS IN THE CHIEF INDUSTRIES.

Sugar.

3. A fairly favourable season can be recorded, although the very dry weather tended to affect the juice content of the cane, particularly in the drier areas, resulting in poorer recovery and a slight increase in the extraction ratio. Plant canes, generally, gave better results than the ratoons.

4. A total of 71,585.2 tons of cane was ground by the four factories, yielding 8,026.1 tons of sugar, as compared with 67,801.5 tons of cane ground and 8,049.7 tons of sugar produced in 1939. The extraction ratio was 1 ton of sugar from 9.33 tons of cane, that for 1939 being 1 ton of sugar from 8.64 tons of cane; a large proportion of the crop was produced at a ratio of 1 : 8.18 (a record low ratio). The highest and lowest extractions were 1 ton of sugar from 8.18 and 10.75 tons of cane respectively. There was an increase of about 5.5 per cent. in the acreage of canes reaped. The crop season ended during May. Yields were a little higher than last year, averaging about 23.64 tons per acre; 2,541.9 acres were reaped by the four factories exclusive of contributors, metayers and syrup cane. The estimated area under sugar cane remains at 4,000 acres failing more reliable statistics.

5. The average f.o.b. price of sugar was £9 18 6 per ton as compared with £8 19 1 per ton in 1939.

6. While B.H. 10/12 and B. 2935 are likely to remain the standard varieties for wet and dry areas respectively for the present, there is a noticeable tendency to give more attention to other more promising commercial seedlings such as B. 3013, B. 3439 and B. 35187.

7. Prospects for the coming crop are distinctly good, despite the unusual dry spell which appears to have set in.

Molasses and Rum.

8. The manufacture of rum reached the highest figure since 1923 and more rum was exported than in any previous year; the bulk of the rum was, however, consumed locally.

9. Production of fancy molasses amounted to 39,720 imperial gallons as compared with 39,077 gallons in 1939, but on account of marketing difficulties only 19,121 gallons were exported, leaving a large carry over to 1940.

10. Production and export of sugar manufactures for the year are shown below—

Product.	Produced.	Exported.	Value £
Sugar ...	8,026.1 tons	6,936 tons	69,382
Molasses ...	277,391 gals.	109,824 gals.	1,137
Fancy Molasses ...	39,720 ,,	19,121 ,,	1,348
Rum ...	45,063.2 ,,	25,307 ,,	3,727
Total value ...	...	...	£75,594

Coconuts.

11. Weather conditions were favourable to production and good yields were obtained throughout the year in most areas. A slight improvement in the export value of the crop occurred due to an increase in the export of nuts, a stronger demand for which was evident. Great difficulty was, however, experienced in finding a remunerative market for copra; useful outlets in one or two of the neighbouring islands continued, at prices ranging between £8—£10 per ton f.o.b., but these markets were limited.

12. After a period of unforeseen delay the Coconut Growers' Association attempted to renew arrangements with a Trinidad factory for the processing of a portion of the copra output into edible oil and lard substitute, but without success; as a result several coconut growers commenced the preparation of edible coconut oil for sale locally with primitive equipment.

13. The area under the crop is roughly estimated at 5,000 acres, but this will be decreased in 1941 due to land under coconuts being acquired for the American Air Bases to be established here.

14. The export of coconuts and copra during 1940 was as follows—

Coconuts	...	3,336,107 nuts valued at	£9,053
Copra	...	525 tons valued at	4,367
Total value	...	...	£13,420

Cocoa.

15. A marked increase in production occurred stimulated by rather higher prices, and exports returned to the normal level of the past few years, after dropping to the lowest figure on record in 1939.

16. Local prices offering were from 30*s.* to 35*s.* per cwt. for estate cocoa, and around 2½*d.* per lb. for peasants' cocoa. Production amounted to 6,008 cwt. valued at £10,316, as compared with 3,197 cwt. valued at £3,967 in 1939. Of the total exports, 56.3 per cent. went to Canada and 34 per cent. to the United Kingdom.

Limes.

17. A significant indication of the present position of this industry is revealed in the production for 1940 totalling, in terms of barrels of limes, 15,895 barrels valued at £7,303, as compared with 34,820 barrels valued at £10,288 in 1939. This is the lowest figure recorded since the opening years of the industry.

18. To a large extent production has relied on small areas (in many cases amounting to only a few trees) of seedling trees on peasant holdings, and as these trees are succumbing to "root disease", and the effects of citrus weevil in certain seasons, production has been falling over the past few years. The position is much the same with seedling cultivations on estates, although more effort is being made in some cases to husband the trees by careful attention to cultivation, manuring and shade. In addition, this year dry weather during the period of flowering and fruit setting, and the damaging effects of Withertip disease following the abnormal rain in early August, were responsible for a smaller crop than usual, particularly in the drier areas.

19. There was a good demand for budded limes (a total of 3,659 plants were distributed from the Government Nurseries in season) from estate owners who are carrying out an annual programme of rehabilitation in accordance with their circumstances, but it will be noted from the Citrus Pests Entomologist's summarised report appearing elsewhere in this Report, that observations appear to confirm a strong incompatibility between the lime scion and the sour orange stock. The matter is receiving careful consideration.

20. Exports of other lime products during the year were as follows—

Green limes	..	1,242 barrels valued at	£1,534
Lime juice	...	25,378 gallons valued at	1,273
Concentrated lime juice		564 „ „	39
Lime oils:			
Distilled	...	5,247 lb. valued at	3,514
Handpressed	...	594 „ „	866

Bananas.

21. Production during the past year has been maintained at a fairly satisfactory level as compared with the year 1939, although very much lower than the peak years of 1937—1938, but the disastrous effects of 1938 have left an indelible mark on the industry, clearly demonstrating the unwisdom of continuing to expand the cultivation of bananas in areas unsuitable for this purpose.

22. There is good reason to believe that the appointment of a banana instructor last year has been of great help to the industry, by continuous touring in the banana growing areas and the maintenance of personal contact with the peasants

23. Production for the year was estimated at 85,000 stems, but the actual total was considerably below this as will be seen in the detailed production figures which follow—

9s.	8s.	7s.	6s.	Total	Counts	% Counts	Rejects	% Rejects
16,471	19,628	29,334	1,432	66,865	46,217	69%	3,599	5 1%

It will be noted that rejects were maintained at a creditably low figure. Irregular shipments due to war conditions were responsible for some loss of fruit, but the industry was fortunate to have no prolonged break in shipping facilities.

24. It is roughly estimated that the area under bananas is around 845 acres, and that there are 237,600 trees planted in this area. Production for 1941 is estimated at 60,000 stems.

2. (B) MINOR AGRICULTURAL INDUSTRIES.

Fresh Fruit Trade.

25. In spite of uncertain shipping facilities throughout the year, the volume of fresh fruit exported was not greatly below that for 1939—a record year. Mangoes and avocado pears were the principal fruits exported. Barbados is now the most important market, and may well continue as such, at any rate for the duration of war, in view of its accessibility to the huckster trade. It is probable that certain fruits will find a ready sale locally as the American Air Bases are developed.

26. Export figures and values for 1940 are as follows—

—	Mangoes.	Avocado Pears.	Oranges.	Grapefruit.	Pineapples.	Other Fruits.
Quantity (crates) ...	12,430	3,005	136	147	21	2,528
Value £ ...	2,913	497	32	52	4	913

Vegetables and Ground Provisions.

27. The value of this trade shows a slight increase over 1939, i.e. £1,193 as compared with £1,038 in 1939; principally due to increased exports of plantains, yams and tannias.

28. The Plant-More-Food-Crop campaign was pursued with vigour in all parts of the Island with encouraging results, although in many districts planting was delayed on account of the dry weather, and considerable loss and damage was caused to food crops, particularly in the forest areas, following the torrential rain which fell on August 4th. There is evidence of increasing interest in the cultivation of fresh vegetables by peasants as far as weather conditions permit; sales of vegetable seeds from the Department's seed depot were much higher than recent years, especially in the case of carrots, cabbage and lettuce.

29. Seed of an improved type of pigeon pea was obtained from Trinidad for multiplication and distribution.

Cotton.

30. About 30 acres were planted again with cotton (Montserrat strain) for the 1939/1940 crop, which was favoured with better growing conditions than last season, although dry conditions in the southern districts resulted in some premature boll shedding. 18,711 lb. of seed cotton were harvested, which produced 6,237 lb. of lint (ginning outturn about 33⅓%); the yield of lint per acre was 215 lb. An average price of 2*s.* 2*d.* per lb. of lint, c.i.f. Liverpool, was obtained. Cotton exported during 1940 amounted to 6,000 lb. valued at £450.

31. Between 45—50 acres have been planted for the 1940/41 crop with seed of the St. Vincent Superfine V. 135 strain, in place of the Montserrat strain.

Corn.

32. There was a satisfactory response to the campaign organised by the Department for the increased production of corn in certain districts, and up to the end of the year peasants in the northern districts had brought in over 10 tons of corn for sale, under the guaranteed price scheme of 1*d.* per lb. The peasants still have large quantities on hand. All further importations of cornmeal have been stopped, until the local supplies have been used. It is hoped that corn production will continue on a similar scale next season. A quantity of improved corn seed from the Imperial College of Tropical Agriculture in Trinidad was imported for careful distribution to approved peasants, and for multiplication by the Department.

Coffee.

33. More local coffee was in evidence than usual due to the rising prices, but it will be several years before any substantial increase in production takes place. There is a strong demand for Excelsa coffee for new plantings.

Other Crops.

34. Tobacco cultivation has been curtailed by disease as well as the difficulty and expense of raising seedlings in boxes. Ants and mole crickets are at present a controlling factor in the open bed method of raising seedlings practised elsewhere, and this matter is to receive more attention.

35. Small sowings of seed of Job's Tears, *Coix Lacryma-Jobi*, at the Union Agricultural Station, have given very good results, and there would appear to be no reason why this valuable crop should not be regularly cultivated in future.

36. Trials with improved varieties of sweet potatoes, yams and pulses continue.

Bee-Keeping.

37. There was a firm demand for honey during the first half of the year, local prices rising to as high as 30*s*. per tin (56 lb.) in July/August, when intimation was received of the British Government's intention to control the importation of honey into the United Kingdom under a quota system, and to fix the price. St. Lucia's quota was fixed at 15 tons for quota year ended 31st August, 1940, and the maximum selling price was 65*s*. per cwt., c.i.f. United Kingdom port. As a result of this, the local price of honey dropped to around 15*s*. per tin. The industry is unlikely to be affected by the controlled price, but the quota fixed is certain to restrict any expansion unless a suitable alternative market can be found, which appears very doubtful.

38. Exports amount to 85,827 lb. of honey valued at £1,913, and 180 lb. of beeswax valued at £8 (1939—96,225 lb. honey valued at £1,427, and 96 lb. beeswax valued at £4).

Forest Products.

39. The total value of exported forest materials was £2,174 as compared with £2,203 in 1939. Some increase in the export of boards and charcoal is recorded while new products exported are spokes, shingles and posts.

Fishing Industry.

40. This was a poor fishing year, catches rarely being more than adequate for immediate consumption; even the flying fish season was disappointing. Neighbouring islands are finding that heavy catches of fish are only obtainable in deep waters far out to sea, and local indications are the same. Canoes would be unsuitable for this type of fishing and would have to be replaced to some extent by small sloops.

Livestock.

41. A useful expansion in this industry has occurred during the past year, which tends to confirm the encouraging potentialities associated with most branches of animal husbandry in St. Lucia. If full advantage is to be taken of these opportunities, however, more attention must be paid to the planting of perennial fodder grasses which will supplement the poor grazing at present available and provide adequate feed for the animals through the dry months of the year. The more progressive livestock owners have realized this fact already and are increasing their area under fodder grasses every year, but the majority of livestock owners invariably suffer an acute shortage of feed for their animals each dry season. Uba cane, Elephant grass, Guatemala grass or Guinea grass are suitable for this purpose, and the Department will be glad to give further advice and assistance to any livestock owners who may be interested.

42. The difficulty of obtaining regular supplies of a cheap and suitable concentrate is a problem receiving consideration; meanwhile, coconut meal is being manufactured locally in limited quantities and is answering the purpose.

43. The export trade with Trinidad (by local sloops) reached a record figure, details of which are as follows:—

	1940	
	Quantities	*Value*
		£
Horses	16	68
Cattle	116	549
Asses	2	6
Goats	38	11
Pigs	433	576
Mules	10	69
Sheep	113	41
Poultry	3,686	227
Total ...	4,414	£1.547

44. In addition large quantities of eggs were exported for which no figures are available. Eggs are no longer as plentiful as they used to be and with present supplies hardly adequate for local demands, there is urgent need for increased production.

45. Consideration is being given to the fixing of the liveweight price of animals to protect the producer, and ensure that he receives a fair price.

46. No infectious diseases among animals were reported during 1940.

Animal Inspection Service.

47. Animal importations into the Colony during the year under review were as follows—

Goats ...	2
Pigs ...	3
Sheep ...	2
Dogs ...	5
Poultry and Game	36
Donkeys ...	2

Thirty-three export certificates were issued for animals leaving the Colony, and seven certificates in connection with the export of hides and skins.

Soil and Forest Conservation.

(a) *Crown Lands Allocations.*

48. During 1940 a total of forty-nine (49) applications for Crown Lands were received from the Crown Lands Department for inspection, which together with thirty-three (33) applications brought forward from 1939, amounted to eighty-two (82); of these forty-nine (49) were approved and eight (8) rejected, while twenty-five (25) were carried forward to be inspected early in 1941. Details of this work are as follows—

	1—5 acre units.	*5—10 acre units.*	*Total acres.*
Approved ...	14	35	362
Rejected ...	—	8	72

49. Observations during the past year have confirmed that in several parts of the Colony there is little or no Crown Land remaining as suitable for alienation.

(b) *Soil Conservation.*

50. The Department has given full prominence to soil conservation work again throughout the year, at meetings, in the schools, and in pamphlets and leaflets prepared on crop production, but the response has been very disappointing. Apart from the efforts of a few enterprising estate owners

there is little progress worth recording, meanwhile the effects of soil erosion are undoubtedly extending in most districts. Ocular demonstration is more likely to overcome the present apathy of the peasant proprietor than any other method; this is clearly shown in the interest which has already been aroused in the first demonstration plot commenced by the Department last year at Morne Giraud in the Gros Islet district, and the Allotment Scheme at Canaries.

51. Pig erosion continues more or less unabated, and other animals are adding to the erosion problem through not being properly controlled. These conditions will remain until stockowners understand the advantages to be gained from better feeding and management of their animals.

(c) *Forest Conservation.*

52. The two forest patrols as described in the 1939 Annual Report operated throughout the year and undoubtedly have had a deterrent effect on squatting and other forest trespass in the forest areas. Several prosecutions were made by the patrols under the Timber Protection Ordinance.

53. Good use is being made of funds recently provided for reafforestation work in the important catchment areas of the Colony penetrated and ravaged by squatters in the past. Some 3,095 Teak plants and 1,640 Honduras Mahogany plants were planted out during the year in these areas; the Honduras Mahogany plants, especially, have made excellent growth. In addition seedlings of local timber species were planted out, i.e. 96 Laurier canelle and 170 Laurier mabre; it is intended to give increasing attention to the planting of these local species next year.

Importation of Foodstuffs.

54. Details of imported foodstuffs over the past year are omitted for reasons of economy. It is encouraging to be able to record that apart from wheaten flour, cornmeal and vegetables, all other items of foodstuffs show decreased importations, in a number of cases well below the figures for 1939. The increase in wheaten flour imports was not as great as in 1939, although cornmeal was much higher. Local vegetable production was hampered by the unfavourable weather prevailing during the first half of the year, and this would account for increased importations. More tinned milk was imported than usual, which ought not to be necessary if due attention were paid to the opportunities for keeping stock.

55. It is questionable whether this improvement in local production will be maintained, or as evident next year as it is this year, in view of the American Air Bases to be established here, which will not only mean heavy increases in the importation of foodstuffs, but will attract a large number of peasants who will find little time for agricultural work and thus fall back on imported foodstuffs themselves.

SECTION II. WORK IN THE DEPARTMENT OF AGRICULTURE.

1. Plant and Seed Introduction, &c.

56. Introduction of planting material during the year comprised 2 lb. and 6 packets of seed, and 269 plants, roots and cuttings, including 7 new sugar cane varieties; in addition, a regular supply of vegetable seeds was maintained for local sale. The Plant Inspection Service dealt with a total of 37 importations exclusive of those mentioned above; of these, 9 received treatment prior to delivery, and 10 were destroyed. 19 certificates of inspection were furnished for planting material leaving the Colony.

57. The distribution of planting material from the Department's Plant Nurseries during 1940 is shown below:—

	Plants.		Cuttings	lb.
Budded limes ...	3,659	...	...	...
Other citrus * ...	7,027	...	...	...
Other fruit ...	244	...	...	...
Cocoa & spices ...	2,041	...	...	...
Cane & corn ...	...	...	1,442	9
Fodder & pasture grass ...	...	...	2,398	...
Other grasses ...	3,000	...	...	...
Cover crops ...	...	...	200	17
Forest trees ...	3,181	...	...	...
Ornamentals ...	...	552	...	...
Miscellaneous ...	...	3,454	...	...

* Includes 4,075 Sour Orange seedlings mainly for nursery work.

2. Work at the Union Agricultural Station.

58. Regular cutting and recording of the Guatemala Grass Manurial trial was commenced in April; each set of treatments was cut every 8 weeks, and by the end of the year the experiment had been cut over four times.

59. Thirteen sweet potato varieties—11 from Barbados, 1 from Trinidad and 1 local—were planted in July and reaped finally in February, 1941; growth and final results were generally satisfactory, and the most promising varieties were clamped for a storage test: the whole collection of varieties was replanted in December for a dry-season trial.

60. Adlay (*Coix lachryma-jobi*) received further attention and 2 plots were planted in August; good growth was made, and the plots were reaped in January, 1941, a growing period of 143 days: a yield equivalent to 3,100 lb. per acre was obtained: small scale hulling and milling trials are in progress.

60. Other crops grown for observation and multiplication comprised the following:—

Yams—Barbados Lisbon, St. Lucia Lisbon, Hunt, Horn and Coconut Lisbon. A satisfactory yield was obtained.

Kudzu Vine (*Pueraria thumbergiana*). Good growth was made until September, when a distinct dormant period, lasting until January, 1941, was noticed.

Tepary Bean (*Phaesolius Acutipholius*). This plot was damaged by the flooding that occurred in August, but a small quantity of seed for propagation was obtained.

Soya Bean. A small plot was planted in June, and reaped in October: a fine stand was obtained, the yield being 20 lb.; equivalent to 860 lb. per acre.

Cowpeas—"Extra Early Ramshorn" and "Improved"—from the United States of America, Okra No. 81 from Kirkee, India, and 3 varieties of *Pigeon Peas*—Trinidad selected and 2 local selections—were also planted.

The Citrus Orchards were maintained, and all varieties cropped well; oranges suffered from bird and moth damage, and it is estimated that over 50% of the crop was lost from these causes.

Limes. Both Hybrid and West Indian all bore good crops: the main lime block yielded 108 barrels, as compared with 148 barrels for 1939.

Mangoes continued to make good growth, and all varieties with the exception of *Ennuna*, fruited during the season.

The *Sugar Cane* variety area was maintained and all introductions planted out: 1,442 plants were distributed.

3. Government Stock Farm, Union Station.

61. The number of animals was unchanged except for pigs: the old Large Black boar was disposed of, and the Berkshires eliminated entirely; 2 young Large Black sows were introduced from Trinidad. One old sow was slaughtered on account of an indeterminate ailment, and the trouble found to be due to Kidney Worm (*Stephanurus dentatus*) attack: consequent on this finding, a programme of regular spraying with copper sulphate solution has been adopted.

62. Twenty-five (25) Large Black piglings were bred and sold from the Farm during the year.

63. The planting of approximately 1 acre of Uba Cane was undertaken in June.

64. The return of tours and station services is set out below :

	Jack Donkey	Thoroughbred Stallion.	¾ Holstein Zebu Bull.	Holstein Bull.	Sussex Bull.	Large Black Boar.
Station Services ...	17	21	1	6	1	49
No. of tours	3	1	2	2	3	2
Days on tour ...	106	82	314	136	326	95
Outstation Services...	22	8	34	24	24	7

65. *Union—Plant & Seed Introduction.*

Avocado Pears	30 pieces budwood	(4 varieties)	D/A, Trinidad
do.	100 tips	(6 varieties)	,, Dominica
Sweet Potatoes	12 varieties		,, Barbados
Breadfruit roots	7 pieces		,, Barbados
Yams	8 tubes	(4 varieties)	,, Barbados
Algaroba	24 pods		,, Antigua
Hibiscus	7 varieties	(24 cuttings)	,, Barbados
Canna	8 varieties	(3 pieces each)	,, U.S.A.
Aristolochia elegans			,, Puerto Rico
Phaeomeria Speciosa			,, ,,
Homalocladium—platyclinum			,, ,,
Pine apple	5 plants		,, ,,
Elephant Grass	2 varieties	(5 cuttings)	,, Trinidad
Derris elliptica	2 varieties		,, ,,
Sugar Cane	7 varieties	(43 cuttings)	,, ,,
Phaseolus mungo (wooly pyrol)		1 lb.	,, ,,
Phaseolus aureus (green gram)		1 lb.	,, ,,
Divi-divi			,, ,,
Peltophorum ferrugineum			,, ,,

SECTION III—PLANT NURSERIES.

66. The Departmental nurseries at Union, Rabot, Barre de l'Isle and Quilesse were engaged in the propagation of citrus and other economic crops for distribution; the Quilesse nursery is now used to raise seedlings of local and introduced forest trees for annual reafforestation work. Strict attention is given to soil conservation methods in all the nurseries.

Pests and Diseases.

67. The following summarised report has been prepared by Mr. R. G. Fennah, M.A., A.I.C.T.A., F.R.E.S., Citrus Pests Entomologist, and indicates the scope of his investigations during the year under review :—

68. During the past year the numbers of Citrus Weevils (*Diaprepes* spp.) have been low, and in July comparatively few specimens—all *D. abbreviatus* —were found in the fields. This lessening of the adult population is ascribed (on the basis of survey data) to the high incidence of parasites in the previous year. In 1940 general parasitism of egg-masses, based on estimates from two localities, was 52 per cent. in the third week in July. In the Soufrière district parasitism reached 69.2 per cent. and almost a third of the unparasitised eggs in this locality were dead when found, probably on account of asphyxiation due to a film of water forming between the leaves which enclose the egg-mass. Accordingly it was possible to predict with confidence that the incidence of larval attack on the roots of citrus trees would be low between August 1940 and April 1941. This low incidence was subsequently confirmed by examination of roots in different areas.

69. The propagation of *Tephrosia candida* has been continued by several estates, and the plant thrives well. There is a tendency to delay in cutting back to a suitable height, and, as yet, the plants are not sown thickly enough to exercise their effect as a cover-crop. This is due largely to the need for using the land for other small crops until the young citrus trees have grown sufficiently to take possession of the field. The object of growing *Tephrosia* is to provide a cover crop which will keep down weeds, act as a low windbreak, and as an agent for nitrifying the soil, and which, being unacceptable as food to *Diaprepes* will serve to promote dispersal from the field in which it is grown, and to discourage immigration from areas outside. As a complementary measure it is desirable to make the citrus trees, at the time of egg-laying, unacceptable as hosts for the adult beetles. Work in this direction was begun as far back as 1936, and has been resumed with a study of the factors governing choice of sites for oviposition and choice of food.

70. The relation between growth-rate of young budded limes and attack by Purple Scale (*Lepidosaphes* spp.) and Snow Scale (*Pinnaspis minor strachani*) was examined and it was found that a positive correlation exists between the abundance of scale insects and low vigour of the tree. Vigour (expressed as an index integrating various growth measurements) was correlated positively, in a long series of plants grown under uniform conditions, with the weight of the total root system and with the weight of the fibrous (feeding) roots alone. Under the conditions of the experiment differences in growth-rate were found to be persistent. On this basis a test of vigour was devised for use in the nursery, in which a small circle of bark is punched out of each plant at a fixed height (about four inches) by means of a small cork-borer (a thin metal tube sharpened around the rim of one end) and the time taken for the wound to heal over is noted. Trees that are slow to heal, compared with others of the same age growing in the same beds, are fit only for rejection. Towards the end of the year experiments were begun in injecting trees with a view to testing the effect of increased nutrient supply to the tree on the development of scale insects. This problem is still under investigation.

71. A complicating factor in the control of citrus weevil attack is the comparative inability of limes budded on sour orange to recover rapidly from weevil damage at the roots. Other undesirable features of such trees frequently noted in the dry season, are (1) the drying out of fruit in the early stages of development, (2) sparseness of foliage in proportion to the number of branches and (3) die-back of branches, or, in the case of young trees, of the whole scion down to the bud union. This type of behaviour has been found independently of weevil attack at the roots, and such symptoms are considered as manifestations of an intrinsic incompatibility between the lime scion and the sour orange stock.

72. Panama Disease (*Fusarium cubense*)—An intensified campaign against this disease was carried out during the dry season; the survey reveals that Panama Disease is continuing to spread, a higher incidence being noted in areas affected by flooding and soil erosion.

73. Figures for the year 1940 show an incidence of 4.01 per cent., an increase of 1 per cent. over 1939. The percentage of diseased plants in new gardens up to 3 years old was 2.61 per cent., the corresponding figures for old gardens over 3 years old being 4.67 per cent.

Agricultural Education.

74. Advisory work among the peasants in all districts of the Colony was given all possible attention, but more district staff is urgently necessary to achieve optimum results from these efforts. Peasants proprietors showed a keen demand during the year to have their seedling stocks of mango and

citrus top-worked or grafted; no less than 3,153 mangoes were top-worked or grafted to the Julie variety, and a total of 115 citrus stocks were grafted or budded to recognised orange varieties.

75. The Pupil Teachers' Examination in Agriculture was held during August, a total of 32 teachers being examined; a report on the results was later submitted to the Inspector of Schools.

76. The Department continued to give all possible attention to the maintenance of school gardens. The thirty-second annual examination of the Primary Schools in Agriculture was conducted by the agricultural officers and a report submitted to the Inspector of Schools.

77. Six Cadets were in residence at Union Station throughout the year; three passed out at the end of the year on completion of their two years' course.

Publications, Correspondence and Organisations.

78. The following publications were prepared by the Department for local distribution during the year—

Pamphlet No. 3 "Cotton Cultivation."
Two leaflets in connection with the Plant-More-Food-Campaign.
Illustrated poster on Rats.

Memoranda was prepared for the Inspector-General of Agriculture for the West Indies, and the usual annual and monthly returns were furnished.

79. 549 Minute papers, 1,509 incoming letters and 1,175 outgoing letters were dealt with during the year.

80. A large number of bulletins and reports were regularly received from Departments of Agriculture and other Agricultural Institutions in all parts of the world, and these are gratefully acknowledged.

81. The Agricultural Superintendent or the Assistant Agricultural Superintendent attended numerous meetings during the year.

4. Legislation Affecting Agricultural Industries.

82. New legislation passed during 1940 was as follows—

The Banana (Amendment) Ordinance No. 2 of 1940—profits allocation.

The Cotton Ordinance No. 3 of 1940—to regulate and control the Cotton Industry.

St. Lucia Limes Association Ordinance No. 6 of 1940—incorporates the St. Lucia Limes Association.

Lime Products Cess (Amendment) Ordinance No. 7 of 1940—provides a substituted schedule for cess on lime products.

Peasants' (Loans) Ordinance No. 16 of 1940—provides for the granting of loans to peasant owners.

Statutory Rules & Orders No. 24 of 1940—Banana (Amendment) Regulations—protection from injury.

Statutory Rules & Orders No. 94 of 1940—compulsory colouring of grapefruit and oranges.

Statutory Rules & Orders No. 17 of 1940—Importation of Cattle (Restriction) Notice—certificate.

Statutory Rules & Orders No. 25 of 1940—Minimum Wage (Agricultural Labourers) Order—general.

Statutory Rules & Orders No. 23 of 1940—Sugar Control (Quota & Local Consumption) Order—Sugar, fancy molasses, cane farmers.

Statutory Rules & Orders No. 52 of 1940—Plant Protection (Banana Disease) Regulations—Panama Disease eradication.

Statutory Rules & Orders No. 101 of 1940—Minimum Wage (Agricultural Labourers) (Amendment) Order—minimum rates for time work (man, woman) for piece work.

RAINFALL RETURNS, 1940.

Observation Stations.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Total.	Maximum in one day and date.		No. of days of rain.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.		
*Gros Islet Reduit Estate	·62	1·30	2·08	·97	1·42	5·20	5·76	9·24	3·84	...	11·81	...	42·24	5·75	5th Nov.	90
*Cap Estate ...	...	...	2·22	·80	1·97	4·66	4·31	2·92	2·09	2·96	6·32	...	28·25	2·25	2nd July	106
Castries, Corinth ,, ...	1·01	1·39	4·69	2·84	3·16	11·34	6·14	16·19	7·82	7·22	18·03	3·56	83·39	5·55	5th Nov.	189
Marquis Estate ...	1·80	·57	5·25	2·70	2·57	8·33	7·44	10·59	4·48	6·86	7·90	1 78	60·27	3·00	3rd Aug.	91
†Union Experimental Stn.	2·02	1·26	3·87	1·89	3·01	7·35	6·39	13·06	6·70	6·27	10·29	2·89	65·00	4·27	4th Aug.	239
Choc Estate ...	·54	·89	2·53	2·37	2·31	6·28	6·16	10·50	2·41	6·40	8·50	3·34	52·23	5·40	,,	148
†King George V Mem. Park	1·76	1·40	4·90	1·28	3·39	7·36	6·77	14·09	7·68	8·50	11·94	3·31	72·38	5·39	,,	218
The Barracks, Vigie ...	1·23	1·13	3·31	1·65	2·29	6·20	5·31	11·25	6·14	5·21	9·51	2·88	56·11	3·90	,,	192
Soucis Est., Cul-de-Sac	1·85	1·02	5·13	2·30	2·99	7·73	9·29	13·19	7·82	7·97	17·00	7·01	83·30	5·10	,,	173
Crown Lands Est., ,,	3·18	·76	8·12	4·00	5·18	8·75	10·61	21·11	9 50	10·52	15·02	5·38	102·13	10·10	,,	243
Mont D'Or Est., Roseau	2·31	·60	5·34	2·61	2·55	5·93	7·44	14·09	5·92	6·24	9·61	6·57	69·21	9·64	,,	245
Belair Estate, ,, ...	1·69	·58	4·82	2·23	2·87	6·42	7·77	10·10	5·92	5·64	8·73	5·94	62·71	2·60	,,	250
Vanard ,, ,, ...	2·07	1·70	6·58	3·42	4·79	7·05	9·95	18·10	7·16	7·95	12·39	8·30	89·46	8·10	,,	165
Roseau ,, ,, ...	1·55	·70	4·67	2·03	2·25	5·66	7·95	13·92	5·86	4·58	8·83	6·73	64·73	6·20	,,	212
†Barre de l'Isle Nursery	3·40	1·98	11·11	4·51	5 81	9·39	10·49	18·72	10·26	10·52	10·98	5·53	102·70			
Soufrière, La Perle Estate	·65	2·23	3·49	1·00	3·57	8·20	15·51	12·88	4·80	10·20	12.05	8·96	83·54	3·38	3rd Aug.	173
Ruby Estate ...	1·63	1·32	4·29	1·62	2·42	7·07	9·90	15·22	4·70	8·40	11·60	9·57	77·74	4·37	4th Aug.	160
Fonds Doux Estate ...	1·15	1·27	4·44	1·53	3·58	5·40	10·01	16·06	3·57	8·77	9·53	7·02	72 33	4·54	,,	209
Union Vale ,, ...	1·32	1·34	3·42	1·35	3·07	5·62	8·97	13·80	3·62	7·13	7·47	6·55	63·66	4·22	,,	190
Beausejour ,, ...	2·04	1·61	6·57	3·23	5·12	6·30	11·02	15·22	5·30	11·15	12·02	8·88	88·46	4·67	,,	294
Belle Plaine ,, ...	2·55	1·72	7·32	3·16	4·92	6·93	13·53	14·75	5·11	11·05	12·64	9·00	92·68	4·91	,,	289
Rabot Estate ...	1·86	1·27	4·69	2·15	4·07	5·89	11·33	12·96	4·55	9·50	9·60	8·98	76·85	3·75	3rd Aug.	265
†Rabot Nursery ...	1·73	1·19	4·03	1·97	4·07	6·73	11·72	14·96	3·96	9·47	9·48	9·27	78·58	3·75	,,	264
†Quilesse ,, ...	3·25	2·40	11·23	5·33	7·74	10·30	12·83	20·43	12·99	14·03	16·96	9·16	126·65	8·14	,,	294
Choiseul, Morne Lezard Est.	1·96	·95	6·26	2·04	3·59	5·08	4·56	12·20	4·67	6·96	8·31	4·79	61·37	3·20	4th Aug.	124
Park Estate ...	2·64	1·09	6·77	3·27	5·28	5·23	7·47	8·27	4·25	9·28	10·63	5·98	70·16	1·93	3rd Mar.	217
Woodlands Estate ...	8·28	2·19	11·97	2·72	5·76	5·90	9·55	9·27	8·82	13·09	14·04	5·81	97·40	6·28	9th Jan.	238
Londonderry Estate ...	1·70	·96	5·60	2·45	4·70	5·95	6·81	10·55	3·45	6·20	9·40	5·45	63·22	3·20	4th Aug.	128
Balembouche Estate ...	·73	·81	3·36	1·18	2·89	5·31	5·59	9·08	5·85	5·84	4·83	4·21	49·68	2·16	3rd Sept.	130
Laborie, Giraud Estate ...	1·70	·97	8·40	3·79	5·10	5·48	8·35	16·36	5·22	10·54	12·06	6·02	83·99	4·83	4th Aug.	169
Black Bay Estate ...	·40	·66	4·68	1·03	2·51	5·75	5·21	11·40	5·37	10·33	5·70	3 24	56·28	3·05	3rd Aug.	169
Vieux-Fort, Moule-à-Chique	·98	No rain	3·96	1·40	1·78	3·62	3·67	6·07	3·63	4·04	5·56	1·92	36·63	1·72	5th Mar.	84
St. Urbain Plantation...	·94	·21	3·82	1·32	2·44	4·92	4·69	11·80	4·11	8·39	5·44	2·21	50·29	3·86	4th Aug.	151
Retraite Estate ...	2·09	·66	4·17	No rain	2·39	6·07	6·00	11·69	5·53	9·29	7·59	2·88	58 36	3·45	,,	165
Vieux-Fort Factory ...	1·66	·28	3·71	1·01	1·56	5·74	4·66	11·66	5·76	6·05	5·32	2·03	49·44	3·50	3rd Aug.	133
Beasejour Estate ...	·80	·41	3·69	1·18	2·84	5·24	5·48	11·81	4·65	9·52	6·48	2·87	54·97	3·75	4th Aug.	157
Micoud, Troumassée Est.	·52	1·62	8·40	·90	·30	3·30	7·86	17·38	6·60	7·20	6·65	2·56	63·29	10·66	,,	66
Mamiku Estate ...	1·69	·79	6·80	1·87	2·20	5·99	6·06	13·06	9·01	6·08	5·69	2·52	61·76	5·65	,,	213
Fonds Estate ...	1·76	·94	7·76	1·33	3·56	5·21	7·29	10·69	6·29	5·79	8·57	3·33	62·52	3 62	,,	237
Dennery, Prospect Est. ...	2·25	·82	9·03	4·53	3·04	7·12	9·28	16·38	7·67	8·23	10·33	3·57	82·25	8·16	,,	260
Border Estate ...	·87	.22	8·30	3·44	1·51	4·05	10·12	12·13	7·98	·97	6·12	2 10	57·81	6·00	,,	211

* Record not complete. † Departmental.

Maxima= Quilesse Nursery. 126·65 | Troumassée Estate. 10·66—4th Aug. | Beausejour Estate Soufrière & Quilesse Nursery—294

26th February, 1941.

E. T. WARD. *Agricultural Superintendent.*

Urbano